



LEADING EDGE

Leading Edge, supported by the Society for Engineering in Agriculture and the Australian Centre for Precision Agriculture, provides a local and worldwide window on engineering and PA research.

Satellite imagery confirms soil influence

Satellite crop vigour imagery is achieving results for Wee Waa cotton grower Paul Hawkins following a program of crop vigour monitoring during the 2002–03 season. The use of the imagery — sourced from Queensland Cotton's SciAg division and managed by local agronomist Shane Kable — has allowed for soil variations to be accurately assessed for their impact on crop performance.

Critical to this is the isolation of potential variables as a cause of variation such as management or nutritional factors. The findings from this process are now being extended by Paul to manage similar soil type areas on the farm through a soil renovation program. Paul who operates the family farm 'Willawah' south of Wee Waa, intends to extend the crop monitoring program to include the rest of the farm.

The field chosen for satellite monitoring was planted to cotton in October and has an area in the south west corner which was known to be impacting crop performance. A series of satellite images taken throughout the season at 10 metre resolution were used to assess crop vigour across the field and the imagery downloaded to GPS enabled handheld computer software to ground truth the results in the field.

TRUTH IN VARIATION

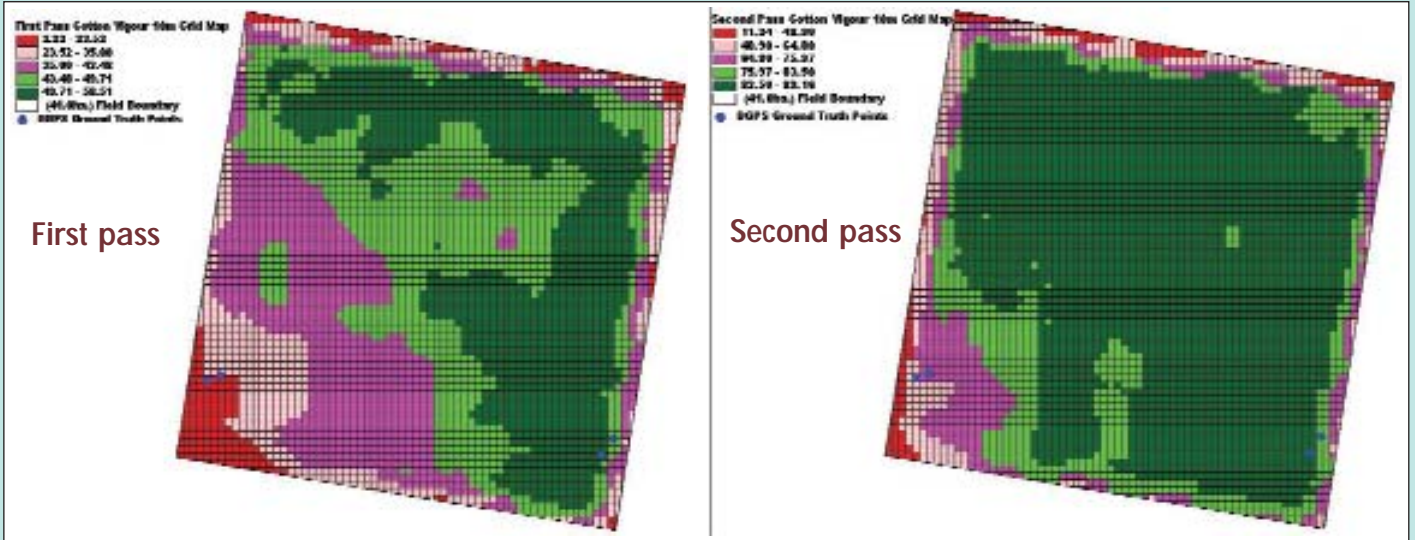
The variation in crop vigour was confirmed by ground truthing and aligned with the known soil variation. To investigate further, an 'in crop' program of GPS referenced soil testing and tissue testing was commenced. The findings of these tests, when analysed by SciAg's information lab, confirmed that the soil typing corresponded with the variation in crop vigour. The

tests also confirmed that available nutrients were not a limiting factor in crop growth.

The combined soil and plant tissue testing identified that the areas of poor growth shown by the imagery had sufficient available nutrients so as not to restrict growth. The areas of good crop vigour actually had lower plant available soil nutrients because of the healthy growth.

The only significant variable between the areas of crop vigour was a difference in soil texture as confirmed by the soil tests. The soil in the poor vigour area was sandy loam, while the soil in the good vigour area was a sandy clay loam.

A series of images taken during the season show the progressive evening-out of crop vigour over the field as the crop compensates for a poor start. The final image

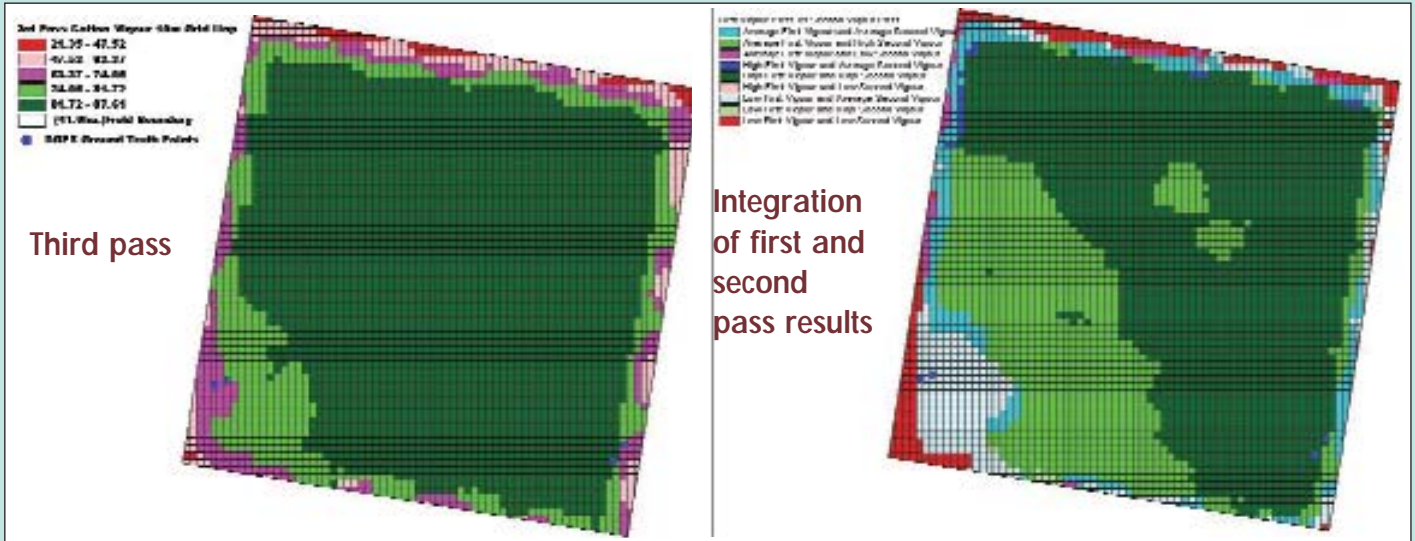


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taken in early February shows the south west corner has poor vigour compared with the rest of the field. It is also the area with the lightest soil.

Paul was able to confirm from these findings that poor crop vigour in the sandy loam in the south west corner, was not a nutrition deficiency issue but was related to crop emergence and moisture availabil-

ity. The poor structural integrity of the soil when wet had led to surface sealing and poor crop emergence followed by reduced moisture availability once the crop was growing.

While Paul admits to being aware of a problem in this area of the field, the use of satellite imagery and data analysis has allowed for an accurate estimate of the cost

to the farm and comparison of data to rule out unseen factors.

A program of soil renovation for this field and similar fields can now be commenced secure in the knowledge that it is economically viable and results can be monitored and assessed.

For more information, contact SciAg on 07 4662 4322.

Ag Eng students get the right bias

By Gary Alcorn

Every student from Australia's only specific four-year agricultural engineering degree course at the University of Southern Queensland gains a job before graduating — possibly a unique record.

Part of their success could be lawn bowls, that genteel etiquette-heavy game more likely to be played by the 40 years plus brigade.

USQ Ag Eng Club former president, 24 year old Charlie MacFarlane bowls enthusiast and reckons more young people should be getting into the sport.

"We have (over 50) members, both past and present students, as well as some lecturers and other people from the industry. We try to have some type of get together every couple of months such as the infamous Ag barbecues.

"It's a great way to relax,

meet new and past students, and keep up to date with what the other ag's are doing,

all over a few beers," he said.



USQ ag engineering students Loretta McKeering, Charlie MacFarlane and Andrew Pike can look forward to having job offers before they graduate.

After five years of study and vocational work he is looking forward to graduating as an agricultural engineer with extra business logistics qualifications.

"The practical background of most ag engineers, combined with the nature of the course at USQ, means that graduates are capable of working in a variety of areas, and usually do."

After some time in the bush helping manage the state government bore capping and piping program in Longreach and Charleville districts of western Queensland, he is back at USQ for his final semester.

Charlie reckons he knows which way his career as an ag engineer is headed.

"In 5-10 year's time, hopefully I will be looking at a management role of some description, so the double degree will be handy for me."